

Short-circuit rating

The standard short-circuit strength of our distribution boxes is:

STANDARD SHORT-CURCUIT STRENGTH	
16 – 125A	6 – 10kA
160A	16kA
250 – 400A	20kA

In most cases, this short-circuit rating is sufficient for mobile distribution boxes. When feeding distribution boxes from low-voltage transformers with very short cables to the main distribution box, a higher short-circuit current may flow. In this case the current limitation capability of the distribution box's main fuse may not be sufficient. The short-circuit current must then be calculated under the actual operating conditions.

Transportation and storage

For transportation and storage the distribution boxes can be stacked. Make sure, however, that the protective covers of the built-in electrical protection devices, the covers of the fitted earth contacts and CEE sockets and any sockets for control units do not become damaged. Store the mains cable in such a way that it and its rubber grommet cannot be kinked or trapped during transport. Also make sure that the plug is protected against damage.

Connection extension leads

To prevent thermal overload of the sockets, the connection leads of the connected consumers must have the legally specified cross-section.

CROSS SECTION	
16A 3-pin	up to 15 meters: 1.5 mm ²
	over 15 meters: 2.5 mm ²
16A 5-pin	2.5 mm ²
32A	6.0 mm ²
63A	16.0 mm ²
125A	min. 35.0 mm ²

At longer lengths and under unusual environmental conditions the reduction factors specified in the relevant IEE Wiring Regulations BS 7671 must be applied.

Residual current protection

All distribution box sockets of or with less than 32A must be protected with residual current devices with a tripping current of no more than 30mA and max 40ms tripping time.

Warranty Conditions

INDU-ELECTRIC mobile distribution boxes are manufactured according to the applicable directives, standards and regulations.

As part of final inspection and testing, the required inspections and tests are performed on all distribution boxes and recorded. This ensures that all products are built to the same, high quality standard. Should a supplied product arrive defective please report immediately.

The general warranty applies only if the product is used for its intended purpose and under the specified operating conditions.

User Manual



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User manual for INDU-ELECTRIC Power Distribution Boxes

INDU-ELECTRIC mobile power distribution boxes have been specially designed for use on construction sites, on stage and in the TV-, film-, and event industries. With an enclosure made from THERMOLENE®, an exceptionally durable material, which meets the requirements for the highest specified protection class IK10 (BS-EN 62262: impact energy of 5 kg at a drop from 400 mm height) INDU-ELECTRIC power distribution boxes are extremely reliable, even under harsh operating conditions, at extreme heat, strong rain and prolonged full load. THERMOLENE® stands for an exceptional performance. The low thermal resistance of THERMOLENE® ensures optimum heat dissipation, allowing safe and reliable operation even at prolonged full load (see section “Ambient temperature”). INDU-ELECTRIC power distribution boxes are designed and manufactured in conformance with the Low Voltage Directive.

BS EN 61439-1	Low-voltage switchgear and control-gear assemblies. General rules
BS EN 61439-4	Low-voltage switchgear and control-gear assemblies. Particular requirements for assemblies for construction sites (ACS)

Further applicable specifications are the provisions of the employers’ liability insurance association:

BS 7909:2008	Code of practice for temporary electrical systems for entertainment purposes
BS 7671	Requirements for Electrical Installations

Visual inspection *for signs of damage and deterioration before use*

Before taking the equipment into operation, perform a visual inspection. Pay special attention to any damage (cracks) of the protective covers for the SCPD (short-circuit protective devices), residual current devices, sockets, and (if fitted) the connectors for control units, the connecting cable including rubber grommet and the enclosure. In your own interest, please replace any defective components immediately. Missing socket covers, for example, can lead to corrosion of the contacts, resulting in overheating of the contacts and consequently fusing of the insert. According to standard BS EN 61439-1 defective components should be replaced with identical parts. Repair work must then be carried out by a competent person or under supervision and instruction of a competent person. Please see IET Code of Practice for In-service inspection and Testing of Electrical Equipment for the definition of a competent person. A complete PAT Test routine should be carried out after each repair. Any existing residual current devices must be tested for correct functioning by pressing the test button before each use or hire. For protection of the 16A and 32A single phase sockets we are mainly using single module electronic RCBOs. In case of a missing neutral the electronic RCBOs will not provide personal protection. Therefore its urgently requested that the test button is pressed before each use. Please replace the RCBO in case it does not trip when the test button has been pressed. If a distribution box has been stored for a longer period, test the RCDs’ tripping times with a suitable tester before putting the box into operation again. The test instrument for testing the RCD should be capable of applying the full range of test current to an in-service accuracy as given in BS EN 61557-6.

PAT (Portable Appliance) Testing

Pat testing or portable appliance testing is an important part of Health and Safety in the work place. The Electricity at Work Regulations place a legal responsibility on employers, employees and self-employed persons to comply with the provisions of the regulations and take reasonably practicable

steps to ensure that no danger results from the use of such equipment. This in effect requires the implementation of a systematic and regular program of maintenance, inspection and testing. The Health & Safety at Work Act (1974) places such an obligation in the following circumstances:

1. Where appliances are used by employees.
2. Where appliances are supplied or hired.
3. Where appliances are repaired or serviced.

Although there are no general regulations for PAT testing frequency, the test intervals should be specified so that any likely faults can be identified on time. Power distribution boxes in the event- and film industry are moved around frequently and are far more object to mechanical stress and vibrations than in an everyday environment.

According to the „IET Code of Practice for In-Service Inspection and Testing of Electrical Equipment“, the frequency of inspection and testing of portable equipment for industrial use should be as follows

INSPECTIONS		
Formal visual inspection:		Every 3 months or before each hiring (recorded)
Combined inspection and testing:	for portable distribution boxes up to 18 kg:	every 6 months (recorded)
	for movable distribution boxes with carrying handles:	every 6 months (recorded)
	for any distribution box for hiring:	every 6 months (recorded)
	for stationary distribution boxes and fixed installation:	Every 12 months (recorded)

Portable and movable boxes may be at greater risk of damage and wear than stationary equipment. Each check and the test results should be recorded to allow for future comparison, for written identification of defects to be remedied and to provide information for an assessment of risks. A PAT should not be used on sensitive electronically accessories like power analysers, ammeters and similar. Please refer to chapter insulation test.

Insulation Test

BS 7671 requires that insulation resistance is measured between all of the live conductors and between the live conductors and with the protective conductor connected to the earthing arrangement. The electronic components of the mobile distribution boxes, such as indication lamps, measuring devices, RCBOs (single module unit only), can incur damage at test voltages => 500V and will falsify the reading. They must therefore be disconnected or the relevant fuses removed. The active conductors can be electrically connected with each other and tested against PE. In this case the electronic devices do not have to be disconnected. Insulation resistance measurements are meaningful for the total circuit only when all switching elements in the circuit are closed.

Network configuration (type of earth connection)

Our mobile distribution boxes are generally laid out for a TN system.

Ambient temperature, thermal load and load factor

The power distribution boxes are designed for operation under continuous load at an ambient temperature of 30 °C.

Load factor of the power outlet circuits

Due to the distribution boxes’ internal temperature, an outside temperature of 30°C results in an average load factor of 0.75 per circuit. In the worst case*, the rated currents for the individual power outlet circuits are:
(*worst case= ambient temperature over 35°C, MCB/RCD fitted without spacer, with closed protective cover over MCB/RCD.

LOAD FACTOR	
<i>Rated current of connector</i>	<i>Rated current</i>
16A	10,80A
32A	21,60A
63A	42,50A
125A	84,37A

Please contact us if you intend to use your distribution box at temperatures exceeding 40°C.

Usage location – weather resistance

Observe the protection classes on the identification plate. Distribution boxes with a protection class of less than IP44 should be used only under dry conditions. Stage or floor boxes with a protection class \neq IP20 must not be used with the sockets facing upwards under damp or wet conditions or outdoors. All of INDU-ELECTRIC distribution boxes – unless the identification plate does not indicate a protection class less than IP44 – can be used outdoors, also in severe weather conditions. Note that the distribution boxes must not stand in water that is more than 20mm deep, unless they are designed for these conditions. To prevent the inner heating up further through sunlight, the distribution boxes should, where possible be placed in a shady location. Do not place the distribution boxes with the fuse side directly against a wall, as this impairs heat dissipation from the built-in short-circuit protective devices (SCPD). For distribution boxes mounted in flight cases, the same limitations regarding their usage location apply. Note, however, that the flight case is made of wood and may swell when exposed to moisture. Our distribution boxes are designed for pollution degree 3 (industrial environments).

Overvoltage

Transient overvoltage can be the reason for malfunction of electronic components, such as measuring devices and electronic RCDs.

Transient overvoltage can be caused by:

- Electrostatic discharge
- Switching off especially inductive loads
- Lightning strike in the vicinity
- Switching operations in the power grid (surge, pulse rise times of several μ s, pulse duration of several 10 μ s)

By default our distribution boxes are not protected against transient overvoltage. Should defects on any installed instruments frequently occur or if the power outlet circuits are to be subsequently protected against transient overcurrents, most distribution boxes can simply be fitted with Class 2 surge protection. In this case, the varistors of the surge protection must be tested at regular intervals.